

## REMARKS/ARGUMENTS

### 35 USC §102

The Office rejected claims 1-2, 9-11 under 35 USC 102(b) as being anticipated by Gottier (U.S. Pat. No. 4,747,858). The applicant agrees to some degree and amended claim 1. Claim 2 is canceled and claims 9-11 are dependent on amended claim 1.

As amended, claim 1 expressly requires a step of "...cooling the semi-rich solvent using refrigeration content of at least partially expanded rich solvent..." and a step of "...cooling the feed gas using refrigeration content of the at least partially expanded rich solvent and the absorber overhead product..." These limitations are not taught by Gottier, and the rejection should therefore be overcome.

### 35 USC §103

The Office rejected **claims 4, 8, and 19** under 35 USC 103 as being obvious over Gottier in view of Mehra (U.S. Pat. No. 4,421,535). The applicant respectfully disagrees, especially in view of the amendments herein.

First, not all of the elements of the claims are present in the cited references, alone or combined (*supra*). Moreover, the references expressly and unambiguously teach against their combination. Specifically, Gottier teaches in column 5, line 2 et seq that

"... because the carbon dioxide is being separately recovered for reinjection, it is desirable to recover it at the highest possible pressure so that recompression requirements for its recycle do not become energy intensive..."

and in column 7, line 32 et seq. that

"... The separation is controlled primarily through the physical solvent flow rate, rather than the refrigeration duty. In addition, little or no flashing of process streams to lower pressures is required for solvent regeneration. Rather, solvent regeneration can be achieved by stripping at or near the feed pressure. Both of these process characteristics of the present invention reduce the amount of power required to perform this separation by minimizing refrigeration power and carbon dioxide recompression power at the expense of using greater heat input in the present invention relative to the prior art carbon dioxide recompression power at the expense

of using greater heat input in the present invention relative to the prior art..."

Clearly, Gottier's configuration provides advantages only by using high pressure on the rich solvent side. On the other hand, Mehra expressly teaches that

"... In summary, the oil absorption, refrigerated oil absorption, simple refrigeration, and cascaded refrigeration processes operate at the pipeline pressures, without letting down the gas pressure, but the recovery of desirable liquids (ethane plus heavier components) is quite poor..."

and that

"... The liquid solvent, rich in ethane plus heavier hydrocarbon components, is let down in pressure in stages in order to reduce energy consumption..."

Such process parameters are irreconcilably conflicting and thus fail to provide any suggestion or motivation to combine. Still further, it is noted that Gottier must rely on external refrigeration (here: closed cycle refrigeration source [e.g., column 7, line 8 et seq.]), which is further inconsistent with the claimed subject matter. Consequently, and at least for these reasons, the rejection of claims 4, 8, and 19 as being obvious over Gottier in view of Mehra should be withdrawn.

The Office also rejected **claims 6-7, 13, and 15-17** under 35 USC 103 as being obvious over Gottier in view of Foglietta (U.S. Pat. No. 6,712,880). The applicant respectfully disagrees, especially in view of the amendments herein.

Again, not all of the elements of the claims are present in the cited references, alone or combined (*supra*). Still further, the references also fail to provide any motivation or suggestion to combine as Gottier cannot dispense with high pressure on the rich solvent side as discussed above. Still further, it should be noted that Foglietta does not employ depressurization of a rich solvent (wherein that rich solvent absorbs CO<sub>2</sub>) but teaches depressurization of a cryogenic processing stream to remove NGL from a feed gas. Not surprisingly, Foglietta thus expressly teaches that:

"... Inlet gas stream 40 is typically treated in a treatment unit (not shown) to remove acid gases, such as carbon dioxide, hydrogen sulfide, and the like, by known methods such as desiccation, amine extraction or the like..."

It should be readily apparent that such configuration is entirely inconsistent with the claimed subject matter as Foglietta's configuration is based on an entirely different process at parameters incompatible with the operation as instantly claimed. Therefore, the references fail to provide any suggestion and motivation to combine and the rejection of claims 6-7, 13, and 15-17 as being obvious over Gottier in view of Foglietta should be withdrawn.

The Office further rejected **claims 14 and 20** under 35 USC 103 as being obvious over Gottier in view of Burr (U.S. Pat. No. 4,599,096). The applicant respectfully disagrees, especially in view of the amendments herein.

Once more, not all of the elements of the claims are present in the cited references, alone or combined (*supra*). Additionally, the present invention uses a membrane separator for bulk separation of CO<sub>2</sub> on the feed side of the column. In contrast, it should be noted that Burr teaches use of a membrane separator to remove components from a side draw to so prevent freezing out of the components in an azeotropic mixture. Such location of the separator is not simply interchangeable as is evident from Burr:

"... The arrow 39 symbolically represents the withdrawal of liquid via conduit 9 on the 9th theoretical plate and return thereof via conduit 17 or 34 on the 12th theoretical plate, respectively. Without such recirculation, the curve 40 in dashed lines represents the C.sub.2 H.sub.6 concentration, whereas solid curve 41 is obtained using the recirculation mode of this invention. It can be seen that the liquid to be recycled is withdrawn at the point of highest ethane concentration, and that the ethane concentration in the region of maximum concentration clearly increases by utilizing the process of this invention..."


Therefore, the references fail to provide any suggestion and motivation to combine and the rejection of claims 14 and 20 as being obvious over Gottier in view of Burr should be withdrawn.

**Request For Allowance**

Claims 1, 3-21, and 23 are pending in this application. The applicant requests allowance of all pending claims.

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Respectfully submitted,  
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